

# TRAITÉ DE COOPÉRATION EN MATIÈRE DE BREVETS

## PCT

### RAPPORT PRÉLIMINAIRE INTERNATIONAL SUR LA BREVETABILITÉ

(chapitre I du Traité de coopération en matière de brevets)

(règle 44bis du PCT)

Référence du dossier du déposant ou du mandataire 03-07187/YK	<b>POUR SUITE À DONNER</b>	Voir le point 4 ci-dessous
Demande internationale no. PCT/FR2004/001480	Date du dépôt international ( <i>jour/mois/année</i> ) 14 June 2004 (14.06.2004)	Date de priorité ( <i>jour/mois/année</i> ) 16 June 2003 (16.06.2003)
Classification internationale des brevets (8 <sup>e</sup> édition, sauf indication d'une #dition ant#rieure) Voir les informations pertinentes dans le formulaire PCT/ISA/237		
Déposant RENAULT S.A.S		

1. Le présent rapport préliminaire international sur la brevetabilité (chapitre I) est établi par le Bureau international au nom de l'administration chargée de la recherche internationale selon la règle 44bis.1.a).

2. Ce RAPPORT comprend un total de 6 feuilles, y compris la présente feuille de couverture.

Dans les feuilles jointes, toute référence à l'opinion écrite de l'administration chargée de la recherche internationale doit être entendue, à la place, comme une référence au rapport préliminaire international sur la brevetabilité (chapitre I).

3. Le présent rapport contient des indications relatives aux points suivants :

- |                                     |               |   |
|-------------------------------------|---------------|---|
| <input checked="" type="checkbox"/> | Cadre n° I    | Base de l'opinion   |
| <input type="checkbox"/>            | Cadre n° II   | Priorité  |
| <input type="checkbox"/>            | Cadre n° III  | Absence de formulation d'opinion quant à la nouveauté, l'activité inventive et la possibilité d'application industrielle  |
| <input type="checkbox"/>            | Cadre n° IV   | Absence d'unité de l'invention  |
| <input checked="" type="checkbox"/> | Cadre n° V    | Déclaration motivée selon l'article 35.2) quant à la nouveauté, l'activité inventive et la possibilité d'application industrielle; citations et explications à l'appui de cette déclaration |
| <input type="checkbox"/>            | Cadre n° VI   | Certains documents cités  |
| <input type="checkbox"/>            | Cadre n° VII  | Certaines irrégularités relevées dans la demande internationale   |
| <input type="checkbox"/>            | Cadre n° VIII | Certaines observations relatives à la demande internationale  |

4. Le Bureau international communiquera le présent rapport aux offices désignés conformément aux règles 44bis.3.c) et 93bis.1 mais pas avant l'expiration du délai de 30 mois à compter de la date de priorité (règle 44bis.2), sauf si le déposant a présenté une requête expresse à cet égard en vertu de l'article 23.2).

Bureau international de l'OMPI 34, chemin des Colombettes 1211 Geneva 20, Switzerland  no de télécopieur +41 22 740 14 35	Date d'établissement du présent rapport 22 May 2006 (22.05.2006)  Fonctionnaire autorisé  <p style="text-align: center;">Athina Nickitas-Etienne</p> no de téléphone : +41 22 338 89 95
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# PATENT COOPERATION TREATY

TRANSLATION

From the  
INTERNATIONAL SEARCHING AUTHORITY

## PCT

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

To:

Date of mailing **See form PCT/ISA/210**  
(day/month/year)

Applicant's or agent's file reference

**03-07187/YK**

**FOR FURTHER ACTION**

See paragraph 2 below

International application No.

**PCT/FR2004/001480**

International filing date (day/month/year)

**14.06.2004**

Priority date (day/month/year)

**16.06.2003**

International Patent Classification (IPC) or both national classification and IPC

**H01M8/02, H01L35/28, H01M8/04**

Applicant

**RENAULT S.A.S**

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/EP

Authorized officer

Facsimile No.

Telephone No.

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/FR2004/001480

Box No. I	Basis of this opinion
1.	<p>With regard to the language, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.</p> <p><input type="checkbox"/> This opinion has been established on the basis of a translation from the original language into the following language _____, which is the language of a translation furnished for the purposes of international search (under Rule 12.3 and 23.1(b)).</p>
2.	<p>With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:</p> <p>a. type of material</p> <p><input type="checkbox"/> a sequence listing</p> <p><input type="checkbox"/> table(s) related to the sequence listing</p> <p>b. format of material</p> <p><input type="checkbox"/> in written format</p> <p><input type="checkbox"/> in computer readable form</p> <p>c. time of filing/furnishing</p> <p><input type="checkbox"/> contained in the international application as filed.</p> <p><input type="checkbox"/> filed together with the international application in computer readable form.</p> <p><input type="checkbox"/> furnished subsequently to this Authority for the purposes of search.</p>
3.	<p><input type="checkbox"/> In addition, in the case that more than one version or copy of a sequence listing and/or table(s) relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.</p>
4.	<p>Additional comments:</p>

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/FR2004/001480

Box No. V

Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability:  
citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	<u>1-9</u>	YES
	Claims	_____	NO
Inventive step (IS)	Claims	<u>5, 7</u>	YES
	Claims	<u>1-4, 6, 8, 9</u>	NO
Industrial applicability (IA)	Claims	<u>1-9</u>	YES
	Claims	_____	NO

2. Citations and explanations:

1. Reference is made to the following document:

D1: PATENT ABSTRACTS OF JAPAN, vol. 2002, no. 09,  
4 September 2002 (2002-09-04) & JP 2002 141077  
A (SONY CORP) 17 May 2002 (2002-05-17).

The machine translation of this document, as  
provided by the Japanese Patent Office, was used.

2.1 Document D1, which is considered to be the most  
relevant prior art, describes (the references  
between parentheses apply to said document):

- a basic cell for a fuel cell, including a  
thermoelectric element that consists of N-type  
and P-type semiconductor materials (paragraphs  
17-29) and is positioned between the flow field  
plate on the oxygen electrode side and the  
cooling plate.

The subject matter of independent claim 1 differs  
from the above in that the thermoelectric elements  
are positioned between two basic cells.

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Box No. V

Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability;  
citations and explanations supporting such statement

It follows that the subject matter of claim 1 is novel (PCT Article 33(2)).

The problem that the present invention is intended to solve can be considered to be that of:

- recovering the heat energy generated by the fuel cell as electrical energy.

The solution to this problem, as proposed in claim 1 of the present application, is not considered to involve an inventive step (PCT Article 33(3)) because it would be obvious for a person skilled in the art to position the thermoelectric elements between a cold source and a hot source either inside a basic cell in a fuel cell or between two basic cells in a fuel cell.

Dependent claims 2, 3, 4 and 6 do not contain any features which, in combination with the features of any one of the claims to which they refer, might define subject matter that fulfils the PCT requirements of novelty and/or inventive step (see document D1 and the corresponding passages cited in the search report).

The combination of features in claims 5 and 7 is not found in the prior art and cannot be derived in an obvious manner therefrom, for the following reasons:

On the basis of D1, it would not be obvious to use molybdenum electrodes as the conductive connections in the thermoelectric modules or even

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Box No. V

Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability;  
citations and explanations supporting such statement

to position a plate provided with flanges on the  
outside surface of said thermoelectric modules.

- 3.1 Document D1, which is considered to be the most relevant prior art, describes (the references between parentheses apply to said document):
- a method for recovering the heat energy from a fuel cell using the Seebeck effect by positioning a thermoelectric element between a gas flow field plate and a cooling plate.

The subject matter of independent claim 8 differs from the above in that the thermoelectric element is positioned between two basic cells.

It follows that the subject matter of claim 8 is novel (PCT Article 33(2)).

The arguments set out above with regard to the inventiveness of claim 1 apply *mutatis mutandis* to the subject matter of the corresponding independent claim 8, which is not inventive.

- 3.2 Dependent claim 9 does not contain any features which, in combination with the features of any one of the claims to which it refers, might define subject matter that fulfils the PCT requirements of novelty and/or inventive step (see document D1 and the corresponding passages cited in the search report).